REMARKS

Claim Rejections - 35 USC §102

The examiner rejected claims 1, 3-4 and 6 under 35 USC §102(b) as anticipated by U.S. Patent No. 5,163,430 to Hansen et al. The applicant respectfully disagrees.

Hansen discloses a disk drive wherein the servo control of the actuator arm is implemented as a position controlled servo loop wherein the position of the head is determined in response to servo information recorded on the disk (col. 3, lines 21-35). Acceleration and deceleration curves (FIG. 5) are used to generate appropriate VCM control signal to achieve the desired actuator velocity corresponding to the position of the head with respect to a target track (col. 5, lines 58-61). Hansen is concerned mainly with deriving the optimal acceleration and deceleration curves as determined from various parameters of the disk drive (col. 6, lines 1-41). However, Hansen does not disclose any details concerning a velocity controlled servo loop for controlling the velocity of the actuator arm when the servo information recorded on the disk is unavailable (such as during ramp loading/unloading). As such, Hansen does not disclose or suggest any of the following elements recited in the claims:

1. a back EMF voltage detector for measuring a back EMF voltage across the coil;
2. a current detector for detecting a current I flowing through the coil;
3. an IR voltage detector, responsive to the current I detected by the current detector, for detecting an IR voltage proportional to the current I times the VCM resistance R;
4. a voltage compensator for substantially canceling the IR voltage from the measured back EMF voltage to generate a compensated back EMF voltage;

5. a control voltage generator, responsive the compensated back EMF voltage, for generating a control voltage applied to the coil to generate the current I flowing through the coil; or
6. a stall detector for comparing the current I detected by the current detector to a threshold, wherein a VCM stall condition is detected if the current I exceeds the threshold for a predetermined interval.

Although Hansen discusses the BEMF voltage of the VCM at col. 3, lines 65-67, the discussion is purely analytical in order to describe the parameters of the disk drive which affect the acceleration and deceleration curves. Nowhere does Hansen disclose or suggest a disk drive employing an actual BEMF detector for implementing a velocity controlled servo loop. The examiner asserts that Hansen inherently discloses the use of a current detector merely because Hansen discusses the current flowing through the voice coil at col. 4, lines 2-3. Again, however, Hansen's discussion of current is purely analytical in order to describe the parameters of the disk drive which affect the acceleration and deceleration curves. Nowhere does Hansen disclose or suggest a disk drive employing a current detector for implementing a velocity controlled servo loop. Similarly, nowhere does Hansen disclose or suggest a disk drive employing an IR voltage detector, a voltage compensator, or a control voltage generator, for use in implementing a velocity controlled servo loop.

Still further, Hansen does not disclose or suggest a stall detector for comparing the current I detected by the current detector to a threshold, wherein a VCM stall condition is detected if the current I exceeds the threshold for a predetermined interval. Because Hansen discloses a position controlled servo loop, Hansen would not compare the coil current to a threshold in order to detect a stall condition; rather, Hansen would evaluate the servo information recorded on the disk to detect a stall condition.

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Regardless, Hansen does not disclose or suggest any details concerning a stall detector. The rejection should therefore be withdrawn.

Regarding claim 3, the examiner asserts that Hansen teaches a stall detector including a clock and a counter for counting a number of clock cycles the current I exceeds the threshold. However, nowhere does Hansen disclose or suggest any details concerning a stall detector, let alone a clock and a counter for counting a number of clock cycles the current I exceeds the threshold. Col. 4, lines 5-8 of Hansen describes a stall current of the VCM in the analytical derivation of the acceleration and deceleration curves, but this has nothing to do with actually detecting a stall condition of the VCM. Col. 4, line 60 to col. 5, line 13 of Hansen describes the actuator current applied to the VCM during a typical seek operation, but does not disclose or suggest any details concerning the detection of a stall condition of the VCM. Col. 3, lines 36-44 of Hansen discloses a clock recovery circuit 24 used to recover data recorded on the disk in a known manner which again has nothing to do with detecting a stall condition of the VCM. The rejection should therefore be withdrawn.

The rejection of the remaining claims should be withdrawn for the reasons set forth above.

CONCLUSION

The above amendments to the specification do not add new matter or raise new issues; the applicant respectfully requests the amendments be entered. In view of the foregoing remarks, the rejections under 35 USC §102 should be withdrawn since Hansen discloses a position controlled servo loop rather than a velocity controlled servo loop and therefore Hansen does not disclose or suggest a back EMF voltage detector, a current detector, a voltage compensator, a control voltage generator, or a stall detector. The examiner is encouraged to contact the undersigned over the telephone in order to resolve any remaining issues that may prevent the immediate allowance of the present application.

Respectfully submitted,

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